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RESEARCH ARTICLE

GD COW: A PHENOMENON MUCH DIFFERENT AND DANGEROUS THAN THE GM COW

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ABSTRACT

GD Cow or genetically damaged cow is the one which obviously has damaged DNA. It is entirely different from the GM or genetically modified cow which has a modified DNA. The term modification is a moderate one; often its use is on the positive side but damage is a very destructive term and unfortunately, most of the time it is used with a negative meaning. Here in present case we are debating the use of these terms with reference to the application of sexed semen technology on dairy animals, mainly cows and other related mammals and the outcome is very interesting. The semen sorting methodology certainly produces defects of genetic nature in sperms and this is the basis of present story. This defective sperm with damaged DNA certainly produces a defective zygote upon its fusion with the ovum. Henceforth with, this damage is carried forward very naturally via the route of the formation of a defective embryo, fetus or a neonate. This neonate as defective it is by birth will be more susceptible to the forces of lysis upon reaching youth and maturity and if survived will certainly produce future offsprings with defective DNA. The damage to the DNA in sperm is inevitable and unintentional as it is the inherent outcome of the process of sexed semen manufacture but ramifications as always upon intrusion with natural genetic balance of species, formed and maintained by Mother Nature are varied and not only unwelcome but ominous too.

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INTRODUCTION

Genetically damaged or GD cow is certainly a different concept from the genetically modified or GM cow. GM cow is also a new word, not used so far in any prior art on the subject but GD cow is even the more naïve and lethal avatar of it. Genetic modification is not a new word in plant and vegetable research and we are familiar with genetically modified varieties of innumerable crops like cotton, brinjal, corn, wheat, maize and many others. But this is a new word as relates to higher animals and certainly anyone will be more than surprised to know of its usage with respect to the species Bos indicus or Bos taurus. Clearly we are moving in a direction where we will find much reference to these terms in near future because already we have marched quite farther in this direction. The problem only is that we do not know of it as yet. There have evolved certain technologies that have already produced not only genetically modified cow but to the nightmare of that even the genetically damaged version of this. The whole new scenario that has emerged will certainly open a new field of science dealing with the study of genetic fallouts (Aulakh, 2018) of the application of sexed semen technology on cows and other mammals. This application is primarily intended to increase female progenies in greater numbers so that bigger milk and meat productions can be achieved to feed the rising human populations. It is not a bad idea to do so but definitely there are concerns more important than the provision of food for humanity and if such concerns relate with the essence and material of the biological existence of what has made a man a man then they rightfully deserve a better attention. Genetics is the basis of organic life on earth and it is the one that demarcates a living species from others still keeping the basic similarities of life amongst them. Cow is a mammal and like all other mammals it has a distinctive genetic constitution in the form of very highly organized DNA composition. This DNA demarcates it from other mammalian species like man, dog, monkey, tiger or a hyena and at the same time, it establishes it as a cow. Now if an alteration with the basic structure of it is affected, the cow will no more remain a cow. It will turn into a creature that will be more like some other animal like a horse, dog or fox. In another case scenario, it may turn into some defectively organized and malfunctioned creature with changed morphological or physiological features that nature may not entertain to keep it as such and even as alive and existing. It may eliminate it by numerous processes of death and assimilation that it already

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has in its marvelous 'kitty of disposal forces'. In any case, the outcome may be a surprise but definitely not the welcome one. Nature does not expect us to evolve another dog variety from a cow. It has already evolved the species of dogs by a separate process. If it wants to evolve a new variant of dogs, it will make its route from the very species of dogs already existing and not from the side of its emergence from a cow genus. Even the more, nature will not entertain anything from an outward agency like man to come forward and offer a helping hand for achieving this goal. It can do so on its own and it has proved its ability for this during a very long and elaborate process of organic evolution. It has evolved multi million species of plants and animals on this wonderful planet. It will continue doing this in future too. If man endeavors at anything like this, it will certainly be considered an intrusion on the natural balance of organic life and nature will certainly disapprove of it and not only discourage but eliminate it too by many a processes it already possesses. The outcome will definitely be not as constructive. It may be just devastating. So, man should refrain from doing anything that is like trampling on the fundamental rights and domain of Mother Nature. Since DNA is the signature stamp of existence of life species especially in higher animals, so, any attempt at causing a damage on it in case of cow or some other mammal by a way as in the present case by production and application of sexed semen should be discouraged and stopped altogether otherwise we are already in the knowledge of something called the wrath of natural forces and we should not dare to endeavor at anything that may look like inviting the fury of this.

GM Cow: Does it exist?: There is no such thing as naturally existing. But we all know that man is such a force on earth that can interfere in the internal working of many life processes of nature. Man certainly intervenes in many natural phenomena. We all know of global warming. Man has played a crucial part in it. We know also about rising pollution in the world and we definitely know that man is the fundamental player who caused this. Man caused nuclear debacles of Nagasaki, Hiroshima, Chernobyl and Fukushima and everybody is in knowledge of the damage to natural fauna and flora due to nuclear radiation that was released due to them in natural habitats. Recently, scientists are trumpeting the success of a new technology of sexing sperm that promises a big boom in dairy productivity throughout. Everybody is simply so excited. But anything rosy may turn thorny at anytime. So, we should be ready to look the flip side of this too. Unfortunately, the flip side of this has started to reveal genetic overtures and this is certainly not a welcome happening. The problem with this new technology is that it produces genetic defects in the DNA of cow species and other animals upon which it is implemented (Aulakh, 2019). The DNA gets changed and any creature with a changed DNA is considered as genetically altered. We may call it genetically modified. However, this term may be a misnomer. It may convey an altogether different meaning when used in different contexts. This we will discuss in paragraphs just down under. Broadly speaking, we may divide the discussion in three subheadings dealing with three concepts named genetically tempered, genetically modified and genetically damaged as discussed below.

Genetically modified vs. genetically tempered: An organism may be called as genetically modified when its DNA gets modified. The reason may be anything from a variety of processes that has the capability to do so. Nature does this on many occasions just naturally and we all know of this. This may also be the platform for origin of new species. Nobody can question the capability or jurisdiction of nature to do so but if an unwanted force like man endeavors at doing something unnaturally, the great nature just disapproves of this and discards it by letting loose hundreds or thousands of grand processes at its disposal and we all know of it. But in spite of this, man attempts at doing this. We know of the development of many crop varieties like BT cotton, maize, corn, wheat, mustard or brinjal etc. Since man is socially and economically conscious creature, so he tries to do it aimed at an objective like increasing the crop outputs or developing the disease or pest resistant varieties of them. It is a different question how nature reacts to this because such an endeavor always disturbs the natural rules of survival and immunity e.g. we may prefer better yields from a crop but this may be a hindrance factor on the overall adaptation and evolutionary credentials of that species. We all know that after a period of such a development nature just comes out balancing these acts by redeveloping or in technical terms re-expressing lesser output yielding gene combinations in them like the ones that existed before such a modification came to force and which are obviously so suitable for their overall natural survival capacity or in case of the development of disease or pest resistant crops; it may also happen that nature will react by developing the more aggressive disease causing organism or pest varieties for them for as of now if such pathogens or pests have to survive then they must develop such efficient traits in them that will make them more strong, robust and enduring. These are all natural tactics and work models of the great Mother Nature. But the aim of man is almost always focused on the immediate gain for mankind maybe it is for providing more and better nutrition for starving humanity and so on. So, genetic modification has a positive overtone attached to it, may be it is also unnatural but for humans it has some benefit quotient after all. May be in some cases when somebody does so with a negative attitude like developing a lethal virulent strain of a bacteria or virus e.g. in cases of biological warfare etc. All these are the acts of genetic modifications. But if he simply attempts at doing something that is just playing with the natural genetic structure of a species just to prove that it can happen without caring for the outcome, whether it is on the positive or negative side or such a thing gets happened even without his knowledge or intention and such a thing is of a very smaller magnitude, then such an act is certainly a tempering with the DNA of that species and we may call it as genetic tempering and most of the time it conveys a negative meaning and message.

Genetically tempered vs. genetically damaged: The genetically altered DNA if it is tempered too much will definitely turn genetically damaged as going by the literal meaning of these words. So, a change or alteration on the unexpected or negative side of a smaller magnitude may be genetic tempering and if this change is pulled too far and it causes a distinctive fault or damage in the outcome species; is certainly a genetic damage. The side effects of such a happening are often too clear as visible and definitely unwelcome. Damage is often a demolishing of noticeable dimensions whereas a tempering is usually of a smaller magnitude, many a times just unnoticeable and this is basically a difference between the emergence of a genetically tempered and a genetically damaged species. Tempering may be repairable with a smaller effort and even nature does so by

resorting to minor adjustments in genotypes of future progenies but damage is often irreparable. It may lead to the origin of a new species. In that sense it may sound positive but not all the species that originate, survive to flourish and we all know about this. The great Charles Darwin founded his milestone Evolution Theory on this postulate.

Genetically modified vs. genetically damaged: Genetically modified as already discussed is often used as a term that conveys an overall positive message and genetically damaged conveys a devastating meaning. Damage is damage and modification, many a times it may be on the wrong side but overall, is a positive term used with the positive mindset only. A modification is always intended may be for the selfish interests of man but on the other side, damage is always unintended. Nobody is in demand of this. This is always unwanted. So, the genetically modified cow may be a welcome idea, however within a limited perspective of increasing milk yield or something but definitely in case of animal kingdom, this development of a GM cow will not have many takers and the whole environmentalist lobby and civil society will come down heavily on this. We can just imagine the reaction of them and intelligentsia when they will know of something as happening like a GD cow! It is true and that is also a very strong point that genetically damaged cow will be a biological catastrophe in itself once or anytime it happens. We are not discussing the various attributes of it or the drawbacks that it may possess. Already the prior art is in knowledge of this (Aulakh, 2019). Overall, this will be the failure of science if such a phenomenon does happen.

Death is a criterion in itself: It is a well known fact that semen sorting methodology of flow cytometry introduced and developed by pioneers Pinkel and Gledhill (1982) involves such steps and techniques which subject the most delicate and vulnerable super micro entities called spermatozoa to extreme harsh and rough conditions (Aulakh, 2018) so that they get damaged, torn, decapacitated and a meaningful proportion of them gets killed too (Prakash et al., 2012; Seidel, 2014). So, the sexed semen technology is spermolytic. It is zygolytic too as it has well been established that a sperm with damaged DNA can indeed fertilize an ovum (Henkel et al., 2004; Tesarik et al., 2004) and a damaged zygote will be more likely to be aborted and eliminated (Aulakh, 2019) resulting in further fall in conception rate as conception drop is a serious issue with sexed semen (Dejarnette et al., 2008). Even the chemical fluorescent dye may have serious side effects (Garner, 2009). This technology is also embryolytic (Inaba et al., 2016; Palma et al., 2008; Telford et al., 1990) and it is fetolytic too as more stillbirths are reported with this (Meyer et al., 2000; Steinback et al., 2003; Zadeh et al., 2008). Moreover this technology is neonatolytic too as more neonatal deaths of new born calves are reported (Dejarnette et al., 2009; Djedovic et al., 2016; Steinback et al., 2003; Zadeh et al., 2008) upon the use of this on cows. Lysis (death) is last of all the life processes. It is the end in itself. There is no happening after this. Everything just ends before it takes place. It in itself is a criterion. It does not require an introduction. It is the happening in itself. We can not drag even the discussion beyond this point. It is a reason enough to silence all the bullshit regarding the allowance of such a goddamn thing to happen. Almost everybody on earth will agree unanimously that no body even in heavens has a right to license the letting of such a process to be executed. Only a Devil will vouch for this. So, are we interested to continue with a process that allows the forces of death to be let loose on earth? No, is certainly the answer. Death does not deserve an explanation. It is just the end of every argument regarding the subject. Nobody dies just of its own. It is not a fancy to die. Surely lot many processes must have gotten completed before an organism succumbs to death. Death is last of all the mechanisms of life. DNA damage causes lot many defects in the anatomy and physiology of the living organism. Watson and Crick rightfully named it the "Genetic Code". This code is the master regulator of life. Once, DNA is damaged, this code is damaged too. Damaged and faulted as it becomes, this causes a series of demolitions on the life processes in the body of the living organisms. Here, we are talking of the cow. So, anybody who is involved in the trade and tirade of sexed semen is a murderer of countless cow zygotes, embryos, fetuses, neonates and even the juvenile and mature animals and this is not a simple statement. It carries a message and meaning with it.

India is a deeply religious country worshipping cow: India is a deeply religious country where cow is held in very high regard by its citizens. People refer to it as Mother Cow. This means giving it a place of the status of one's own mother. Probably, this is because it gives milk like every mother feeds her siblings after birth. Out of the gratitude of getting milk from her, cow is held in very high esteem by God fearing citizens. It is also considered a holy entity and deity. People will definitely react with a force if they come to know of this development. So, before this knowledge becomes spread over, such a practice of the production, marketing and application of sexed semen on cows should be stopped altogether.

Dangerous permutations & combinations: There is a famous saying in physics, "You cannot even move your finger without causing a disturbance in the entire universe". It is easy to start a process but often it is extremely difficult to control the after effects. Sexed semen technology will produce genetically damaged progenies in cows. These progenies if survived will grow and mature. They will breed too. It is not necessary that they will breed only with genetically defective members of their clan. They will breed with normal animals too. Again, another generation of progenies will come to exist. They in turn will also grow and mate. Another generation will follow. Generation after generation, the progression will continue. The damaged DNA in the form of defective genes will be carried this way down many generations. There are dominant and recessive genes. This was a great postulate of the famous 'Genetics Theory' of Gregor Mendel whom we still remember as the 'Father of Genetics'. The sad part is that this postulate still holds equally good just like it stood in the days of this great pioneer. The defective genes may be dominant and express themselves in very first generation or second or third one. And who knows that they take the shape of recessive ones and come to express themselves as dominant ones in generation numbered tenth or fifteenth or whatever. There is another angle to it discussed just down under. A cow may give birth to three, four or more progenies in her life time. Suppose two of them are males and three females. Now these three female ones will in turn produce further five progenies each in their respective life spans. So, overall the genetic poison gets spread to nine female progenies which in another next generation will spread to twenty seven and in another to eighty one and in just another to 243 female animals

if all of them survive to mature. In just five generations we end up having genetic poison spread 243 times. Now take another case. Suppose one of the male calves delivered by such a genetically damaged cow gets selected as a breeding sire and he gets a chance to breed 100 cows per year and he does so in five years. This means he pollutes progenies from 500 cows in his single life span. Suppose he gets to do it the AI style and the number is ten thousand cows per annum. Then it simply implies that he pollutes progenies from fifty thousand cows in his life. Just after such ten or fifteen life spans of genetically polluted sires as there may be many in the herds like him in or around different dairy farms or breeding centers, it will not take centuries to spread the genetic poison to hundred thousands or millions of animals. If we understand the basic laws of mathematical and algebraic permutations and combinations, it will be realizable very soon that the entire cattle population in a country will become polluted with genetically damaged animals within a very short period of time may be fifteen to twenty years only. The horror of genetic poison in dairy animals has certainly a big dimension for spreading as a catastrophe. The contention is that if all the 190 million cows get genetically damaged after a certain small period, which means the entire cow species in India has become genetically damaged. This is just like having a 'genetic genocide'. It is a different question that this new breed of genetically damaged animals are more like cows or they are more like dogs or swine or monkeys or what? But genetically damaged species is no more a pure species. It may be a degenerate species or a distorted one or even a new species or to the more of it, it may look like another existing species like a dog or hyena or a horse. So, the people of India will end up drinking milk from a cow that is more a bitch than a cow or more a pig than a cow. Has anybody drunk milk begotten from a bitch or female pig? The answer will certainly be a no but the horrors of genetic adventurism will land us exactly on such a devastating point of fate. Are we ready to accept such a crude and unpleasant reality of life in our lifetimes? If we do not want this to happen, then we all should rise as single unified group and raise a resistance to such an act by anybody whosoever; may be it is a company, lobby, organization or the government. We should stop them from achieving such a despising objective and should force them to abandon such devastating maneuvers and methodologies.

Danger of genetic poison in humans: After all, what is the relation of cow with man? Cow is such a benevolent entity that provides man with the most nutritious and abundant milk. From centuries, man has fed on it. Even beef is eaten by humans. Now, with such a robust bond of this animal with man, there can be no debating that human life can even be imagined on earth without cow? If cow is such an important source of daily food for man and there is available evidence (Beal, 2017; Goldman & Shields, 2003; Kim & Scialli, 2011; Murad, 2017) to prove that a faulty food intake by buccal or nasal route can cause genetic mutation in an organism, then it will be just blasphemous to allow even a percentage of a possibility of genetic damage in the cow which provides us with so important and needful nutrition that we cannot even imagine to live without. Already the point has gotten debated in many of the documents in prior art (Aulakh, 2018). The only thing that we should remember is that no wise person on earth should be involved in an act of inviting such a 'genocidal genetic catastrophe' on earth and these are the only words that deserve to be the concluding ones in any of such a debate.

DNA change may cause cancer: In a very recent study (Fagny et al, 2019); it has been firmly proven that there is a big correlation between the change in DNA; even the single nucleotide polymorphs, of organisms and the prevalence preponderances of cancer. Similar findings were reported by Talseth-Palmer and Scot (2011). This thing is of importance because the subject matter of present discussion is the DNA change in cow progenies. Based on the same arguments, it can well be derived that the cow progenies with defective and changed DNA will be more susceptible to cancer risks because already their DNA has gotten changed. This change even in 'junk DNA stretches' can be a big reason for carcinoma preponderance in animals. We can just anticipate that if a change in junk DNA stretches can cause so serious damages, then such a change in 'active DNA stretches' can be even the more deadly. The bigger outcome will be that we may be having lot of cows with cancer in the herds and in case when such cows are not detected for the disease; this means that we will end up drinking milk from cows suffering from cancer and who can guarantee on earth that the defective milk from cancerous cows will not cause this dreadening disease to happen in humans feeding on that milk or even eating that beef from such animals? This means not only risking the entire cow population in the country or even the world to the most horrifying disease ever known in the entire history of mankind bur also to risk the countless human children, pregnant women, old age people and even the young and grown up men and women to most agonizing fate of suffering from the wretched pangs of this horrifying disease.

Severity of disease and mortality index: A disease always comes along laden with big burden of pain and discomfort. Usually a disease is accompanied by fever, uneasiness, side effects and damage on the living system. Severity of the disease may vary from slight, moderate, extreme or lethal. Depending upon the severity coefficient, the disease may cause damage and side effects on the organism. Side effects may also be in the form of after effects which may take a long time to heal and sometimes, they are unhealable life longs. These may also be in the form of permanent disabilities on the bodies of organisms. Even the physiological or morphological damage may display itself in the form of organ or system failures like loss of kidneys, liver, disability in respiratory or reproductive systems or many a times a portion of central or peripheral nervous system is damaged. These are some of the very ordinary side effects of diseases. A disease may be due to a bacteria or virus creeping in and sitting in an organ or system of the body. But here in the case of sexed semen technology, we are in a way injecting genetic damage or harmful mutation in the genotype of progenies. This directly means that the organisms born this way are inherently carrying a defective or damaged state in each and every cell of their bodies. This is more destructive than a bacteria or virus sitting therein. Bacteria or virus may be contained by the immunity machinery of organism but genetic damage is permanent and uncontrollable and even it will be carried along across generations. This is another fact that it may be in the form of some recessive or dominant gene but carried forward; it is must. Organ failure due to disease may be of singular or multiple nature or it may also be in the form of some morphological disfiguring, decapcitation or mutilation. Sometimes the severity may be of extreme or lethal grades and it may result in the death of the animal. Now the necessity arises to discuss about mortality rates in this situation.

We know of certain diseases that have a very high mortality rate like cancer, sleeping sickness, bird and swine flu, dengue, kidney failure, liver sorosis and heart strokes etc. Even typhoid, tuberculosis, asthma, diabetes etc are top on the charts. Naturally, a disease with hundred percent mortality rate (although it is only an imagination and no such thing like this exists) will stand highest on the mortality index and a disease with zero mortality will be placed lowest of all. We have big killers like bird flu and sleeping sickness with mortality rates as high as 50%. Pulmonary, throat and blood cancer may also have comparable mortality. Even diseases like dengue and swine flu may have mortality rates up to 4-5%. Even pneumonia, typhoid or tuberculosis may have such rates or lesser. One more point is here to be discussed. Suppose swine flu has 4-5% mortality. This means that four or five people who contracted swine flu die out of hundred people who actually were infected by the disease. This means that 95-96 more people have also suffered the pangs of pain and suffering before they actually survived the agony of disease. Now in case of sexed semen technology if a similar figure succumbs to death, that means that an equally proportionate figure of subjects (here the cow species or a similar mammal) might have also suffered the agony of genetic poison in their bodies and they are condemned to live such lives throughout. The genetic defects in their systems will not allow them to lead normal lives and they will continue to live miserable lives with obvious maladies of morphological or physiological nature in their bodies.

Now we come to the crux of the matter. Anybody may wonder as to why a person should succumb to death upon contracting a disease? The answer is quite straight that death is of course the last of all life processes. So, it naturally derives that it happens when enough damage has already gotten wrecked on the life system by the disease or the ailment. Now for a moment let us endeavor to gather and analyze the figures relating to mortality as concerns the application of sexed semen technology on cow or related mammals. It is no surprise when we come to know that death follows as a routine and practice right from the application of this technology on the sperms which become the first prey to this and they are killed in large numbers. Then it is the turn of zygotes, embryos, fetuses, neonates, kids, juveniles and mature animals. The death follows as a rule throughout all the stages of life after this technology has gotten inflicted upon. We may calculate the data of zygote deaths, embryo deaths, fetal deaths, neo-natal deaths, kid, juvenile or mature animal deaths or whatever we can on the issue. All these figures may sound nominal but if all of them are piled together, then they are bound to build an impressive figure. This may be anything but it will certainly be bigger than the mortality rates for dengue, swine flu or hepatitis; much higher than the modern day figures for typhoid, tuberculosis or pneumonia. No need to emphasize that all of these are most deadly diseases known to mankind. So, the sexed semen technology stands no doubt higher on mortality index than all these horrifying diseases. The currently available data on the subject is surely highly insufficient as this is a new issue that we are raising in this write up and much research regarding this is bound to pour in as more and more such projects will be undertaken worldwide on the subject for as we know that at present only the pro sexed semen research is undertaken throughout and most of the time it is financed and supported by the sexed semen companies and various lobbies and governments on back of them.

This is more a propaganda extravaganza than the real research. Countless universities, institutes and organizations are hired and lavishly funded for this. When the flip side of this will be visible to the masses and citizens of the world, the real research and data will start to appear that will definitely bring the real picture out. Now one thing becomes amply clear that the genetic damage caused by this technology is much lethal and dangerous and with such condemnable and ill famous credentials, we need not to discuss further the practical applicability of this. The mortality criteria in itself is a reason enough to derive at a such a conclusion.

Tower of figures: When it comes to nations and governments, macroeconomics and big data come into picture. India is a vast country with about 190 million cattle. Of them, nearly 120 millions are of breedable category. If all of them are taken for the application of this technology even on repeat administrations; this means that at a rate of merely one percent cumulative mortality right from the zygote, embryo or fetal levels to the one of mature animals' life long, the figure stands at an exorbitant 1.2 million cow species (go-vansh) deaths. It is a different question as the exact figures when or anytime if they are honestly collected, are bound to range somewhere between 2-5 percent. Even at a percentage of 0.1% mortality, this figure stands at 1.2 hundred thousands and at 0.01%, this comes out to be 12 thousands. Further at 0.001% this becomes twelve hundreds and still further at 0.0001% mortality, this figure remains still at hundred twenty animals and even at a further lesser mortality at 0.00001%, we stand on a dozen full of gruesome go-vansh murders. In a country where a single cow slaughter attracts a hysterical frenzy, this is too big a number.

Damaged gene travels very long across generations: The truth is not relishable but it is true that damaged gene once it is dominant one, may also travel across generations. Even the recessive genes do the same. We all know about gene linked diseases. They travel too far. There is a famous historical record about the great Queen Victoria who developed de novo mutation for hemophilia and subsequently her two daughters Princess Alice and Princess Beatrice became carriers of this disease and thus the disease henceforth with got transmitted to many royal families of Europe and later on came to be christened the 'royal disease'. Even one son of the queen, Prince Leopold inherited the disease and later on transmitted to his daughter. The disease was due to a damaged gene that expresses itself as the ailment and travels across generations as inherited. Accidentally Queen Victoria developed this mutation and rest is history because it has well been established that none of her parents were hemophiliacs; either sufferers or carriers. Even we also know about color blindness and other gene linked diseases in humans.

Genetically damaged crops: We are all familiar with the concept of GM crops. Genetic manipulation in them is intended and engineered. By intention, nobody would like to produce something very harmful and devastating. So, we can generally conclude that genetic manipulation may be for a favorable and better change. It is an altogether different question how nature takes it? But in case of genetically damaged organism, may be it is a cow or crop; such a favorable and better outcome can not be expected. Just like a GD cow discussed in this write up, we will very soon be familiar with the term genetically damaged crops like GD

brinjal, GD wheat or GD maize etc. Not to mention that such words will carry sinister meanings and such an outcome will definitely mean far dangerous and unwanted implications. Perhaps in case of crops we may be lacking in such invasive or direct injection (Aulakh, 2018) technologies like sexed semen in cows but certainly at some point in future, such unfavorable developments may happen and land mankind in the girth of such devastating debacles. Definitely we have traveled on a point of time in history when extreme wise decisions ought to be taken at least when technology matters of biological nature are involved and even a single callous, half prepared or ill intended maneuver on national or international scale can ensure big damages for future generations to come that will be difficult to repair for very long times, even centuries.

World has already witnessed genetic damage of profound dimensions: The genetic damage is not a new occurrence in human history. However, genetically damaged may be a new term because it has come to be invented and used in the context of the use of words genetically modified. The world has already seen genetic damage of greater dimensions during the nuclear bombings of Nagasaki and Hiroshima. We have seen people dying of cancer of innumerable types. We have also seen organ failures of varied nature in humans and even the births of crippled, maimed and limbless children. It is true that there is no appropriate data on the effect of genetic damage on animals in that period. Similarly, sufficient data could not be generated on plants too. Probably, scientific community world over was not that equipped that time. The world has also witnessed similar radiation debacles during Chernobyl and Fukushima, however to a much lower degree. But the exact data of clear nature is still awaited even of such mis-happenings.

It should naturally take a long time to evaluate the gravity of genetic damage: It surely must take a long time to evaluate exactly the immediate and after affects of a genetic damage. The genetic damage continues from generation to generation. So, studies spread over many generations should be undertaken and research projects organized with all this in mind. The outcomes have to be very clearly studied and evaluated. Then only a meaningful decision can be reached. If a technology is known to cause genetic damage, the application value and ethical standing of its possible usage on subjects of plant or animal origin should be decided after that. If such subjects are a part of food chain for humans or the pets or socially or economically valuable animals, then extra care has to be taken. In the present case study of a technology that is known to inflict genetic damage on cows which are a direct source of milk and meat for humans, the decision has to be the most wisely taken and a study time period spanning a half or full century should not be even sufficient for an effective decision worthy outcome to evolve for such a project. Even the quantum of sample size of animals should be quite big i.e. it may contain some hundred thousands or more animals so that a clear data gets emerged for accurate inference evaluation.

Conclusion

The world is on the verge of encountering horrors till hitherto unknown of the development of a phenomenon that will be known as 'genetically damaged cow' and this is bound to have fallouts of mammoth dimensions for the present and future generations of man and also the very natural existence and survival of Bos indicus or Bos taurus species is at stake. The outcome may be far more complicated, unpleasant and devastating than the wildest of our imaginations on the subject. The only solution seems to take maximum steps to avoid this genetic catastrophe and let it go just untouching the human life. The easiest way for this is that it should go abandoned *en toto* and a unanimous decision of not applying this technology on cows and other animals should be taken as the final verdict on the subject.

Conflict of interest: There is no conflict of interest of any type.

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GLOSSARY OF ABBREVIATIONS

BT: Bacillus thirungiensis gene inserted crop
DNA: Deoxyribose Nucleic Acid
GD: Genetically damaged
GM: Genetically modified
RNA: Ribose Nucleic Acid

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